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PATENT**REMARKS**

Applicants have thoroughly considered the Examiner's remarks and present the following remarks in light thereof. Claims 56-67 are presented for further examination. Reconsideration of the application claims in view of the following remarks is respectfully requested.

Each of the Examiner's rejections will be addressed in the order presented in the Office action.

Nonstatutory Double Patenting

Claims 56-67 stand rejected under the judicially created doctrine of nonstatutory obviousness-type double patenting rejections in view of two related issued patents in view of Cosman '126. However, the nonstatutory double patenting rejections with regard to U.S. Patent No. 6,434,415, claims 1-25, and U.S. Patent No. 6,347,240, claims 1-55, in view of Cosman '126 are inappropriate as claims 56-67 recite aspects that are patentably distinct and not obvious variations of the claims of '415 and '240 in view of Cosman '126.

As an initial matter, '415, and '240 are each based on and claim priority to U.S. Patent Application 07/600,753 filed on October 19, 1990. In contrast, the present application claims priority to a continuation-in-part U.S. Patent Application No. 08/319,615, which was filed on October 7, 1994, now abandoned. As the present patent application *includes additional subject matter not in 08/319,615 and does not* claim priority to the 1990 patent application, a double patenting rejection is not appropriate.

The Examiner generally indicated that claims 56-67 were obvious in view of the claims of '415, and '240 in view of Cosman '126 but does not address each and every aspect of each and every claim as required to support an obvious-type double patenting. Furthermore, the Examiner fails to indicate how the teachings of Cosman '126 as applied to the claims of '415 and '240 would result in claims 56-67 being obvious. For these reasons alone the rejection must be withdrawn. In any case, in order to support the inappropriateness of these rejections, Applicants will briefly address examples of aspects of 56-67 claims that are patentably distinct from and not obvious variations of the claims of '415, and '240 in combination with Cosman '126.

Initially, Applicants note that claims 56-67 distinguish over Cosman '126 for at least the following reasons. For example, claims 56, 58 and 62 recite deriving a

transform and modifying the image based on the transform. The limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such recitals obvious. As another example, claim 60 recites modifying the image data set based on the identified position of the reference points. As another example, claim 61 recites modifying the image data set based on the identified position of the contour of the body element. As another example, claim 64 recites modifying the image data set according to a comparison of projections. The limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such recitals obvious.

Thus, claims 56-67 distinguish over Cosman '126. In addition, claims 56-67 distinguish over the claims of '415 and '240 as evidenced by the Examiner's withdrawal the previous double patenting rejection based only on the claims of '415 and '240. In summary, it has been shown that claims 56-67 distinguish over both Cosman '126 and the claims of '415 and '240 so the double patenting rejection must be withdrawn.

Furthermore, the bases for the Examiner's double patenting rejection is unsubstantiated and without merit. For example, the Examiner asserts without basis that the transform "would be inherent in the system and method of the patented claims in order to carry out the localization" There is no basis for this assertion based on Cosman '126 considered alone or in combination with the claims of '415 and '240 since neither addresses "a relative position between said reference points of the semi-rigid body elements being variable" as recited by each of the independent claims (i.e., see claims 56, 58, 60, 61, 62 and 64.). Applicants request that the Examiner cite a specific portion of Cosman '126 or a specific portion of the claims of '415 and '240 or another reference to support this "inherent" assertion or withdraw the rejection. As noted above, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

The Examiner also asserts without basis that "claims 56-67 merely constitute alternate obvious variations of the patented claims" However, the Examiner has withdrawn the double patenting rejection of claims 56-67 based on the claims of '415 and '240 confirming that claims 56-67 are patentable over the claims of '415 and '240 considered alone. Furthermore, there is no basis for this assertion based on Cosman '126

considered alone or in combination with the claims of '415 and '240 since neither addresses "a relative position between said reference points of the semi-rigid body elements being variable" as recited by each of the independent claims (i.e., see claims 56, 58, 60, 61, 62 and 64.). Applicants request that the Examiner cite a specific portion of Cosman '126 or a specific portion of the claims of '415 and '240 or another reference to support this "alternate, obvious variations" assertion or withdraw the rejection. As noted above, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

The Examiner also asserts without basis that "the localization of the semi-rigid body element... would have been an obvious modificationin that, if the reference points were placed on the skin as taught by Cosman '126, then the relative position of the reference points would change." However, Cosman '126 does not address this aspect of the invention and appears to assume that the relative position of the reference points does not change. Applicants request that the Examiner cite a specific portion of Cosman '126 to support this "obvious" assertion or withdraw the rejection.

In particular, amended claims 56, 58, 60, 61, 62, and 64 recite that "a relative position between the reference points of a semi-rigid body element being variable." In general, claims 56-67 identify the relative position of the reference points for the semi-rigid element, relate the relative position of the reference points during the procedure to the relative position of the reference points in the image data set, and modify the image data set based on the relative position of the variable reference points during the procedure to the relative position of the reference points in the image data set. These aspects of the claims go far beyond the general teachings of Cosman '126 and is not recited by the claims of '415, and '240. As such, claims 56-67 are patentably distinct from the claims of '415, and '240 in view of Cosman '126. As noted above, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

With regard to '415, claims 56-67 recite different aspects than claims 1-25 of '415 in view of Cosman '126. For instance, the current claims recite determining and displaying the geometry of a semi-rigid body element which is different than determining

and displaying the relative positions of a plurality of body elements as recited by the claims of '415 and as noted by Cosman '126. The current claims recite a semi-rigid body element wherein a relative position between the reference points of the body element is variable. This is different than Cosman '126 and the claims of '415 that generally recite that the reference points for each particular body element has a known or fixed position relative to the data points of the particular body element. Also, the current claims recite identifying the relative position of each reference point on a body element which is different than identifying or determining the position of the reference points of each body element relative to the reference points of the other body elements as recited by the claims of '415 and as noted by Cosman '126. Further, the present claims recite modifying the image data set representing a semi-rigid body element based on the relative position of the reference points of the body element intra-procedurally and pre-procedurally. This is different than the claims of '415 and Cosman '126 that recite modifying the spatial relationship of the data points of one body element relative to the data points of another body element. Once again, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

With regard to '240, claims 56-67 recite different aspects than claims 1-55 of '240 in view of Cosman '126. The current claims recite the relative position of reference points of a semi-rigid body element. This is different than Cosman '126 and the claims of '240 that recite representing, modifying, and illustrating the relative position of two or more body elements relative to each other. Once again, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

Additionally, the current claims recite the relative position between two or more reference points of a semi-rigid body element is variable. This is different than the claims of '240 and Cosman '126 that generally recite reference points of a particular body element that have a known spatial relation to the data points of the particular body element. The current claims also recite modifying the image data set based on relating the relative position of the reference points of a body element during a procedure to the position of the same reference points for the same body element prior to the procedure.

This is different than Cosman '126 and the claims of '240 which generally recite modifying the spatial relationship of the data points of one body element relative to the data points of another body element. Finally, claims 56-67 recite determining and illustrating the geometry of a body element which is different than the claims of '240 and Cosman '126 that recite determining and illustrating the position of one body element relative to another body element. Once again, the limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such the recitals of claims 56-67 obvious.

As has been shown, claims 56-67 are patentably distinct from and not obvious in view of the claims 1-25 of the '415 patent and claims 1-55 of the '240 patent. Applicants request that the Examiner withdraw the obviousness-type double patenting rejections based on '415 and '240 in view of Cosman '126.

Claim Rejections — 35 USC § 103

Claims 56-67 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cosman '126. This rejection is improper and must be withdrawn for the following reasons.

First, as noted above, Cosman '126 does not read on the claims. The limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make the recitals of claims 56-67 obvious.

Second, the Examiner asserts without basis that the "relative positions of the reference points will necessarily change...." There is no basis for this assertion based on Cosman '126 considered alone. Rather, this is hindsight analysis. Applicants request that the Examiner cite a specific portion of Cosman '126 or another reference to support this assertion or withdraw the rejection.

Third, the Examiner asserts without basis that the "use of fluoroscopic imaging in order to align these images ... would have been an alternative functional equivalent...." Applicants do not understand the point of this assertion since claims 56-67 do not claim fluoroscopic imaging to align images. In any case, Applicants do not see the basis for this assertion in Cosman '126 considered alone. Applicants request that the Examiner

cite a specific portion of Cosman '126 or another reference to support this assertion or withdraw the rejection.

Fourth, the Examiner asserts without basis that "One skilled in the art would have known that any type of imaging can be used to localize the reference points and align them with previously taken images by the modality of interest." Applicants do not understand the point of this assertion since claims 56-67 are directed to a semi-rigid body element having variable, relative reference points. In any case, there is no basis for this assertion based on Cosman '126 considered alone. Applicants request that the Examiner cite a specific portion of Cosman '126 or another reference to support this assertion or withdraw the rejection.

Fifth, claims 56-67 distinguish over Cosman '126 for the reasons noted above. For example, claims 56, 58 and 62 recite deriving a transform and modifying the image based on the transform. The limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such recitals obvious. As another example, claim 60 recites modifying the image data set based on the identified position of the reference points. As another example, claim 61 recites modifying the image data set based on the identified position of the contour of the body element. As another example, claim 64 recites modifying the image data set according to a comparison of projections. The limited teachings in Cosman '126 relating to scaling, rotating and translating noted in column 11 and 13-19, cited by the Examiner, do not make such recitals obvious.

Thus, the rejection under 35 USC § 103 based on Cosman '126 should be withdrawn.

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CONCLUSION

It is believed that a full and complete response has been made to the Office action and, as such, places the application in condition for allowance. Such allowance is hereby respectfully requested. The fact that Applicants may not have specifically traversed any particular assertion by the Office should not be construed as indicating Applicants' agreement therewith. If the Examiner feels that a personal interview will expedite the prosecution of this application, the Examiner is invited to telephone the undersigned.

It is believed that there are no fees associated with this Response. If the Commissioner determines there are fees due, the Commissioner is hereby authorized to charge any required government fees to Deposit Account No. 19-1345.

Respectfully submitted,



Frank R. Agovino, Reg No. 27,416
SENNIGER, POWERS, LEAVITT & ROEDEL
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400

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